City of Santa Barbara
Parks and Recreation Department

Memorandum

DATE: June 20, 2012

TO: Creeks Restoration/Water Quality Improvement Program
Citizen Advisory Committee

FROM: Jill Murray, Water Quality Research Coordinator

SUBJECT: **WATER QUALITY RESEARCH AND MONITORING PROGRAM UPDATE AND FISCAL YEAR 2013 RESEARCH PLAN**

COMMITTEE DIRECTION – FOR ACTION

That the Committee receive an update on the Water Quality Research and Monitoring Program and concur with the staff recommendation to implement the proposed Research Plan for Fiscal Year 2013.

DISCUSSION

Background

In June 2011, the Committee concurred with the staff recommendation to implement the Research Plan for Fiscal Year 2012 (FY12). In December 2011 the Committee received an update on the Source Tracking Protocol Development Project and concurred with the staff recommendation to postpone some portions of the FY12 Research Plan. At this time, the Committee will receive a mid-year update on FY12 sampling, with a focus on first flush storm monitoring results, parking lot sealcoat, toxicity testing in Mission Creek, and high sodium and chloride in Sycamore Creek, along with recommended changes for the Fiscal Year 2013 (FY13) Research Plan. The proposed FY13 Research Plan is attached.

The goals of the research and monitoring program are to:

1. Quantify the levels (concentration and flux, or load) of microbial contamination and chemical pollution in watersheds throughout the City.
2. Evaluate impacts of pollution on beneficial uses of creeks and beaches, including recreation and habitat for aquatic organisms.
3. Evaluate the effectiveness of the City's restoration and water quality treatment projects, which includes collecting baseline data for future projects.

4. Identify sources of contaminants and pollution in creeks and storm drains.
5. Evaluate long-term trends in water quality.

The underlying motivation behind the research and monitoring program is to obtain information that the City can use to:

1. Develop strategies for water quality improvement, including prioritization of capital projects and outreach/education programs; and
2. Communicate effectively with the public about water quality.

In support of the program goals, the Research Plan consists of six key elements and associated research questions (questions are listed in the attached Research Plan) :

1. Watershed Assessment
2. Storm Monitoring
3. Restoration and Water Quality Project Assessment
4. Source Tracking/Illicit Discharge Detection
5. Creeks Walks/Clean ups
6. Bioassessment

Selected updates from several elements are presented below. Additional results will be presented in the Annual Water Quality Report, to be presented in January 2013.

<u>First Flush Storm Sampling</u>

Each fall the Creeks Division samples the first storm of the season, as this “first flush” is known to lead to the highest concentrations of contaminants in stormwater runoff. In most previous years, creek “integrator sites” (lowest sites on creeks, integrating water quality issues across the entire watershed) have been sampled during every first flush event. Following the changes to the FY11 Research Plan, storm drain and gutters were included in first flush sampling, which took place on October 5, 2011. Runoff was collected from gutters and storm drains at Montecito/Olive Sts., Laguna/Cota Sts., Gutierrez/Quarantina Sts., and Salsipueds/Cota. Sts., along with the integrator sites Laguna Channel at Chase Palm Park, Mission Creek at Montecito Street, Arroyo Burro at Cliff Drive, and Sycamore Creek at the railroad bridge.

These sites were sampled between 5:15 AM and 9:15 AM, when 0.02” to 0.68” of rain had fallen. Water was tested for metals, pesticides, hydrocarbons, surfactants, and toxicity. Metals and hydrocarbons were not detected at elevated concentrations; however some other results were concerning.

In previous years, very few detections of pesticides have been found in creek samples, during both dry and wet weather. Based on a recommendation by the State-funded UP3 Priority Pesticide list, several pesticides were added to the testing suite in FY11. The wood preservative pentachlorophenol was found in almost every sample the first flush of fall 2010, albeit at low levels. This result was corroborated in first flush 2011 samples,

when pentachlorophenol was found in five of nine samples. In addition, 2,4-D, an ingredient in some weed killers, was detected for the first time, and in several samples. The detection limit for this compound was ten times lower than in previous years, which is likely the reason behind the sudden detections. Pyrethroids were also detected, with bifenthrin found at elevated levels in four of nine samples. Unlike 2010, organochlorine pesticides, including DCPA (dacthal), were not detected in drain samples.

Continuing a change made in FY11, storm water toxicity in creeks was tested using invertebrates and algae, which are thought to be more sensitive to some constituents than the vertebrate fathead minnow, which had been used in most previous tests. No toxicity was observed in creek sites. Storm drain and catch basin sites were tested with fathead minnows. Results showed high toxicity in some drain samples. These results show that while Santa Barbara creeks are generally not toxic to aquatic organisms during storm events, due to large amounts of dilution with clean runoff, runoff that is sampled closer to the site of urban activities exhibits toxicity to sensitive species.

Coal-based Parking Lot Sealcoat

Research around the country has raised concerns about the high toxicity of runoff from parking lots sealed with coal-based sealcoat as compared to runoff from asphalt-based sealcoat. According to industry leaders, coal tar is not used in California, but the Creeks Division sought to test this assumption by testing parking lots located in Santa Barbara. A field test was conducted on 50 parking lots throughout the City. Results suggest that approximately 30% of parking lots in the City may contain coal-based sealants. Recently a State Bill banning coal-based parking lot sealcoat was proposed but did not reach a vote in the State Assembly. Work in FY 13 will include a comparison of the toxicity of runoff from the two different types of parking lot sealcoats.

Mission Creek Toxicity

Mission Creek is listed under the Clean Water Act as impaired for “Unknown Toxicity.” The Creeks Division has worked to understand the original basis for the listing, and any potential current toxicity problems in Mission Creek. After conducting many toxicity tests with fathead minnows and invertebrates, the City found no signs of toxicity in Mission Creek. However, the Regional Water Board conducted tests at Mission Creek at Montecito Street which showed toxicity to the algae Selenastrum, suggesting the presence of herbicides in creek water. In Fiscal Year 2012, the Creeks Division collected samples from several locations along Mission Creek and found no toxicity to Selenastrum. High conductivity in Santa Barbara creeks may lead to false positives with test results, and Creeks Division staff will continue to investigate this possibility.

Sycamore Creek Sodium and Chloride

Sycamore Creek was listed recently under the Clean Water Act, based on potential agricultural use of creek water, as impaired for Sodium and Chloride. The Creeks Division conducted creek walks with associated conductivity tests and tested creek

samples for sodium and chloride. Based on results obtained thus far, it appears that Sycamore Creek is high in sodium and chloride due to the natural process of groundwater movement through marine deposits into the creek. One tributary with the highest conductivity, sodium, and chloride ever observed in Creeks Division monitoring will be investigated more thoroughly in FY 13. If results show that the source of sodium and chloride in Sycamore Creek is natural, the Regional Board may de-list the Sycamore Creek from the 303(d) impaired list.

Recommendations for FY13

Several changes are included in the proposed Fiscal Year 2013 Research and Monitoring Plan (attached), including:

1. Tests receiving waters for potential groundwater contaminants.
2. Further investigate potential RV dumping.
3. Conduct monitoring to assist with design decisions for the Mission Lagoon Restoration project.
4. Test for neonicotinoids, a group of pesticides that may be linked to colony collapse disorder in honeybees.
5. Test storm runoff from parking lots covered with coal-based parking lot sealcoat.
6. Conduct additional sampling at the Las Positas Golf Course to support management decisions during dry weather.
7. Collect baseline data for Storm Water Retrofit Projects.
8. Investigate high conductivity in a tributary of Sycamore Creek and also in Honda Creek.

Next Steps

Staff will begin implementing the FY13 Research Plan and perform scheduled monitoring beginning July 2012. The Fiscal Year 2012 Annual Report will be completed and quarterly reporting will resume.

cc: Cameron Benson, Creeks Restoration/Clean Water Manager
Jill E. Zachary, Assistant Parks and Recreation Director